IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of
Reid Von Borstel — Atty. Ref.: 1331-300
Serial No. 09/494,243 — TC/A.U.: 1623
Filed: January 31, 2000 — Examiner: Howard V. Owens, Jr.
For: ACYL DEOXYRIBONUCLEOSIDE DERIVATIVES AND USES THEREOF

* *

September 10, 2004

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Sir:

Applicant hereby appeals to the Board of Patent Appeals and Interferences from the last decision of the Examiner. A Notice of Appeal was filed on February 13, 2004.

REAL PARTY IN INTEREST

The real party in interest is Wellstat Therapeutics Corporation, a corporation of the country of the USA.

RELATED APPEALS AND INTERFERENCES

The appellant, the undersigned, and the assignee are not aware of any related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

STATUS OF CLAIMS

Claims 47-54 are pending and have been rejected. No claims have been substantively allowed.

STATUS OF AMENDMENTS

No amendments have been filed since the date of the Final Rejection mailed August 13, 2003.

SUMMARY OF INVENTION

The invention relates generally to the use of acyl derivatives of deoxyribonucleosides for delivering exogenous deoxyribonucleosides to animal tissue (page 2, second complete paragraph). More particularly, the methods claimed are for treating or preventing mutagen-induced cellular damage by administering to an animal an effective amount of a composition comprising an acyl derivative of a deoxyribonucleoside, including an acyl derivative of 2'-deoxyadenosine, an acyl derivative of 2'-deoxyguanosine, an acyl derivative 2'-deoxycytidine and an acyl derivative of 2'-deoxythymidine (page 2, second complete paragraph, pages 8-15 describing the compounds, and page 30, first complete paragraph). The invention also relates to a method for treating or preventing a mutagen-induced cellular damage by administering an effective amount of a composition comprising an effective amount of at least two compounds of formulae (I)-(IV) (pages 15-17).

ISSUE

The issue in this appeal is whether the subject matter of claims 47-54 is described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. The claims also stand rejected on obviousness-type double

patenting grounds as allegedly unpatentable over claim 3 of U.S. Patent 6,020,322. However, appellants have requested the Examiner to place this rejection in abeyance until the present application is otherwise in condition for allowance. At that time, consideration will be given as to whether or not to submit a Terminal Disclaimer.

GROUPING OF CLAIMS

All claims stand or fall with the decision of the Board.

ARGUMENT

Claims 47-54 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was allegedly not described in the specification in such a way as to reasonably to convey to one skilled in the relevant art that the inventors at the time the application was filed had possession of the claimed invention. Reversal of this rejection is respectfully requested.

The rejection asserts that the pending claims contain subject matter which was not "described" in the specification in such a way as to convey to one skilled in the art that the inventors at the time the application was filed had possession of the claimed invention. Review of the written description, beginning at page 7 of the application reveals that the subject matter of claims 47-54 is described in a way which conveys to the reader that the inventors had possession of the invention at the time the application was filed. For example, at page 30, beginning at line 3, the specification states:

> "The compositions of the present invention may be administered to an animal either before or after exposure to radiation, sunlight or mutagens. The acyl derivative form of the deoxyribonucleosides provides an orally effective means for delivery of deoxyribonucleosides to tissues. These derivatives may also be given parenterally or topically. Administration of the derivatives avoids the problem of rapid catabolism by gastrointestinal, liver and plasma enzymes."

At page 32 in the second complete paragraph, the specification states:

> "There are conditions other than radiation damage in which exogenous deoxyribonucleosides or derivatives thereof have useful therapeutic applications.
>
> Deoxyribonucleic acid has been used to accelerate wound cicatrization or healing, and also to accelerate liver regeneration in experimental animals. It is likely that in these situations, as well as in the situation where DNA is used to promote survival after irradiation of animals, the DNA is serving as a storage depot for deoxyribonucleosides, which gradually releases the deoxyribonucleotides, and deoxyribonucleosides during enzymatic degradation."

At page 34, beginning in the third complete paragraph, the specification states:

> "For treatment of radiation-induced cellular damage or sunburn, or to enhance wound healing, preferred dosages include amounts of the acyl derivatives equivalent to 10 to 1000 mg of 2'-deoxyadenosine, 10 to 1000 mg of 2'-deoxyguanosine, 10 to 1000 mg of 2'-deoxycytidine and 10 to 1000 mg of 2'-deoxythymidine. For example, the composition may comprise 13-1330 mg of 3',5'-diacetyl-2'-deoxyadenosine, 13-1310 mg of 3',3'-diacetyl-2'-deoxyguanosine, 14-1370 mg of 3',5'-diacetyl-2'-deoxycytidine and 14-1350 mg of 3',5'-diacetyl-2'-deoxythymidine. As is understood in the art, in calculating such dosages, the equivalent amount of the 2'-deoxyribnucleoside alone is considered, i.e., the acyl substituent and acid addition portion of any pharmaceutically acceptable salt are not included in the calculation."

Of particular relevance to claim 54 is the description at page 34 in the first complete paragraph, which states:

> "Compositions within the scope of the invention include those which contain mixtures of the acyl derivatives of the deoxyribonucleosides in amounts effective to achieve its intended purpose. Such compositions may contain 0 to 50 mole percent of the acyl derivative of deoxycytidine, 0 to 50 mole percent of the acyl derivative of deoxyguanosine, 0 to 50 mole percent of the acyl derivative of deoxythymidine and 0 to 50 mole percent of the acyl derivative of deoxyadenosine, with the proviso that the total content of the acyl deoxyribonucleosides adds up to 100 mole percent."

The first paragraph of 35 USC 112 requires that the "specification shall contain a written description of the invention". Decided U.S. case law has established that the written description requirement is separate and distinct from the enablement requirement. *Vas-Cath Inc. v. Mahurkar*, 93 F.2d 1555, 1560, 19 USPQ 2d 1111, 1115

(CAFC 1991). As stated in Paragraph I of The Interim Guidelines for Examination of Patent Applications under The 35 USC 112 First Paragraph Written Description Requirement (June, 1998), the written description requirement has several policy objectives. The Guidelines state, in part:

> "[T]he 'essential goal' of the description of the invention requirement is to clearly convey the information that an applicant has invented the subject matter which is claimed. Another objective is to put the public in possession of what the applicant claims as the invention....
> To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. This requirement of the Patent Act promotes the progress of the useful arts by ensuring that patentees adequately describe their inventions in their patent specifications for the benefit of the public in exchange for the right to exclude others from practicing the invention for the duration of the patent term."
>
> "**What is well known to one skilled in the art need not be disclosed**. If a skilled artisan would have understood the inventor to be in possession of the claimed invention at the time of filing, even if every nuance of the claims is not explicitly described, in the specification, then the adequate description requirement is met." (Emphasis added)

See also: *Hybritech v. Monoclonal Antibodies*, 231 USPQ 81, 94 (Fed. Cir. 1986) ("A specification need not teach, and preferably omits, what is well known in the art.")

[LEN, PLEASE CONFIRM THAT THIS IS A QUOTE AND NOT A PARAPHRASE.]

In the present case, mutagens were well known to persons of ordinary skill in this art as of the time of the present invention. In this regard, attention is directed to the attached copies of chapters of three text books concerning mutagens:

Genetics (Second Edition), Strickberger, Ch. 24 pp 554 (1968, 1976) (see: page 565 UV irradiation; page 570 chemical mutagens);

Principles of Genetics (Eighth Edition), Gardner et al.; Ch. 11, pp 288 (1984,1991) (see: page 301 radiation induced mutation; page 305 ultraviolet radiation;

page 308 chemically induced mutations; page 309 Table 11.1 listing chemical mutagens);

Basic Genetics (Second Edition), Hartl, Ch. 14, pp. 363 (1991) (see: page 374 base-analog mutagens; page 375 chemical mutagens; page 376 ultraviolet irradiation; page 377 ionizing radiation).

As evidenced by the quotes from the specification presented above, which describe how to practice the invention, and in view of the fact that a "specification need not teach, and preferably omits, what is well known in the art" (*Hybritech* at 94), one of ordinary skill, upon reading the specification of the present application, would reasonably conclude that the present inventors had possession of the claimed invention as of the time of filing.

On page 2 of the Final Rejection, the Examiner has stated:

> "Moreover, the support in the specification is not adequate for the claim to the treatment or prevention of cellular damage caused by any mutagen".

Whether or not the written description aspect of the statute is complied with in a patent specification is not determined by the "support" in the specification for the claimed invention. Data or other "support" is not required to satisfy the written description requirement. All that is required to satisfy the written description requirement, as noted earlier, is that the patent specification "describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention." The reader of the present specification would not reasonably conclude that the written description is limited only to treatment of radiation induced cellular damage or sunburn with the compounds of the invention.

The Examiner alludes to support for the breadth of claims later on page 3 of the Final Rejection, where it is stated:

> "To provide adequate support to the breadth of the claims, Applicant would have to establish that over a period of time, a population of individuals subjected to a variety of the types of mutagenic substances cited above, were treated for or did not incur any cellular damage. The data presented shows mortality rates after exposure to gamma radiation which may be adequately correlative for the species of treating radiation induced cellular damage; however, this does not correlate to a prevention or treatment of cellular damage caused by any mutagen as broadly claimed."

Again, data presented in the specification is not determinative as to whether the specification provides a written description of the claimed invention. Concerns about whether the invention works or not, if substantiated by adequate evidence or reasoning, could provide basis for an enablement rejection under Section 112, first paragraph, but not a written description rejection. In this case, the Office has found that the application satisfies the enablement requirement of Section 112, first paragraph.

For the reasons discussed above, it is believed that the specification does provide a written description of the claimed invention. Reversal of the rejection for the above-discussed reasons is respectfully requested.

CONCLUSION

In conclusion, it is believed that the application is in clear condition for allowance. Early reversal of the Final Rejection and passage of the subject application to issue are earnestly solicited.

Respectfully submitted,

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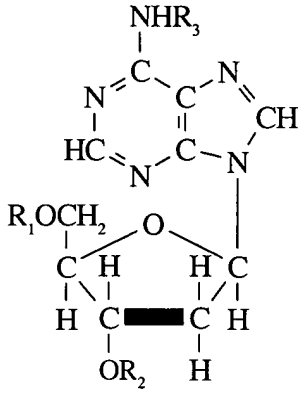
APPENDIX

CLAIMS ON APPEAL

47. A method for treating or preventing mutagen-induced cellular damage comprising administering to an animal an effective amount of a composition comprising an acyl derivative of 2'-deoxyadenosine, having the formula



wherein R_1, R_2, and R_3 are the same or different and each is hydrogen or an acyl group derived from

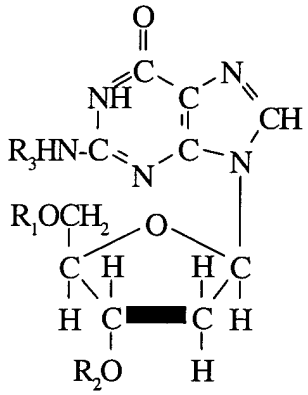
(a) an unbranched fatty acid with 3 to 22 carbon atoms,

(b) an amino acid selected from the group consisting of glycine, the L forms of alanine, valine, leucine, isoleucine, tyrosine, proline, hydroxyproline, serine, threonine, cysteine, aspartic acid, glutamic acid, arginine, lysine, histidine, carnitine, and ornithine,

(c) nicotinic acid, or

(d) a dicarboxylic acid having 3 to 22 carbon atoms, provided that not all of R_1, R_2, and R_3 are H, and where R_3 is not H, then R_1 and/or R_2 may also be acetyl, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

48. A method for treating or preventing mutagen-induced cellular damage comprising administering to an animal an effective amount of a composition comprising an acyl derivative of 2'-deoxyguanosine having the formula



wherein R_1, R_2, and R_3 are the same or different and each is hydrogen or an acyl group derived from

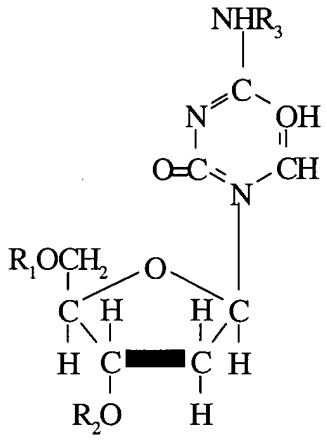
(a) an unbranched fatty acid with 3 to 22 carbon atoms,

(b) an amino acid selected from the group consisting of glycine, the L forms of alanine, valine, leucine, isoleucine, tyrosine, proline, hydroxyproline, serine, threonine, cysteine, aspartic acid, glutamic acid, arginine, lysine, histidine, phenylalanine, carnitine, and ornithine,

(c) nicotinic acid, or

(d) a dicarboxylic acid having 3 to 22 carbon atoms, provided that not all of R_1, R_2, and R_3 are H, and where R_3 is not H, then R_1 and/or R_2 may also be acetyl, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

49. A method for treating or preventing mutagen-induced cellular damage comprising administering to an animal an effective amount of a composition comprising an acyl derivative of 2'-deoxycytidine, having the formula



wherein R_1, R_2, and R_3 are the same or different and each is hydrogen or an acyl group derived from

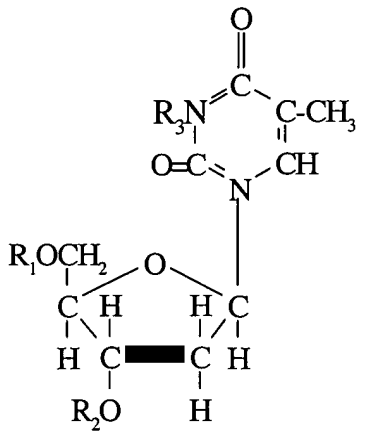
(a) an unbranched fatty acid with 3 to 22 carbon atoms,

(b) an amino acid selected from the group consisting of glycine, the L forms of alanine, valine, leucine, isoleucine, tyrosine, proline, hydroxyproline, serine, threonine, cysteine, aspartic acid, glutamic acid, arginine, lysine, histidine, carnitine, and ornithine,

(c) nicotinic acid, or

(d) a dicarboxylic acid having 3 to 22 carbon atoms, provided that not all of R_1, R_2, and R_3 are H, and where R_3 is not H, then R_1 and/or R_2 may also be acetyl, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

50. A method for treating or preventing mutagen-induced cellular damage comprising administering to an animal an effective amount of a composition comprising an acyl derivative of 2'-deoxythymidine, having the formula



wherein R_1 is an acyl group derived from

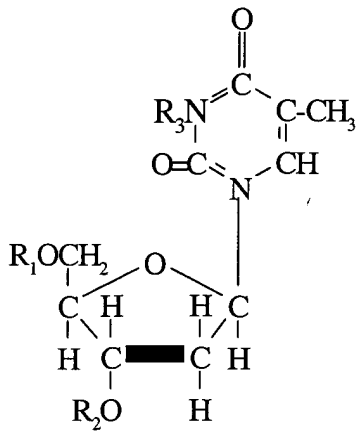
(a) an unbranched fatty acid with 3 to 15 or 17 to 22 carbon atoms,

(b) an amino acid selected from the group consisting of glycine, the L forms of alanine, valine, leucine, isoleucine, tyrosine, proline, hydroxyproline, serine, threonine, cysteine, aspartic acid, glutamic acid, arginine, lysine, histidine, carnitine, and ornithine,

(c) nicotinic acid, or

(d) a dicarboxylic acid having 3 to 22 carbon atoms, and R_2 and R_3 are H, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

51. A method for treating or preventing mutagen-induced cellular damage comprising administering to an animal an effective amount of a composition comprising an acyl derivative of 2'-deoxythymidine, having the formula



wherein R_1 is H, R_2 is an acyl group derived from

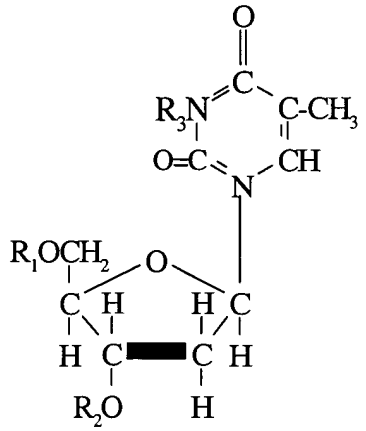
(a) an unbranched fatty acid with 3 to 13 or 15 to 22 carbon atoms,

(b) an amino acid selected from the group consisting of glycine, the L forms of alanine, valine, leucine, isoleucine, tyrosine, proline, hydroxyproline, serine, threonine, cysteine, aspartic acid, glutamic acid, arginine, lysine, histidine, carnitine, and ornithine,

(c) nicotinic acid, or

(d) a dicarboxylic acid with 3 to 22 carbon atoms, and R_3 is H or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

52. A method for treating or preventing mutagen-induced cellular damage comprising administering to an animal an effective amount of a composition comprising an acyl derivative of 2'-deoxythymidine, having the formula



wherein R_1 and R_2 are the same or different and each is an acyl group derived from

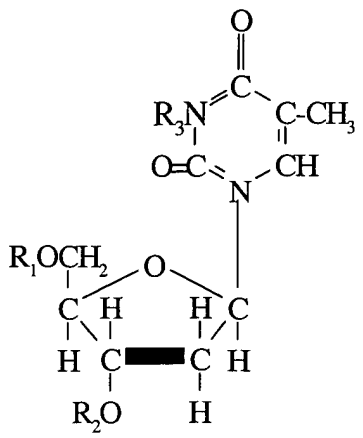
(a) an unbranched fatty acid with 5 to 22 carbon atoms,

(b) an amino acid selected from the group consisting of glycine, the L forms of alanine, valine, leucine, isoleucine, tyrosine, proline, hydroxyproline, serine, threonine, cysteine, aspartic acid, glutamic acid, arginine, lysine, histidine, carnitine, and ornithine,

(c) nicotinic acid, or

(d) a dicarboxylic acid with 3 to 22 carbon atoms, and R_3 is H or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

53. A method for treating or preventing a mutagen-induced cellular damage comprising administering to an animal an effective amount of a composition comprising an acyl derivative of 2'-deoxythymidine, having the formula



wherein R_1 and R_2 are the same or different and each is an acyl group derived from

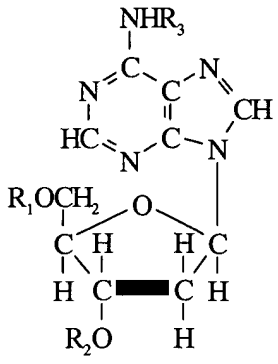
(a) an unbranched fatty acid with 2 to 22 carbon atoms,

(b) an amino acid selected from the group consisting of glycine, the L forms of alanine, valine, leucine, isoleucine, tyrosine, proline, hydroxyproline, serine, threonine, cysteine, aspartic acid, glutamic acid, arginine, lysine, histidine, carnitine, and ornithine,

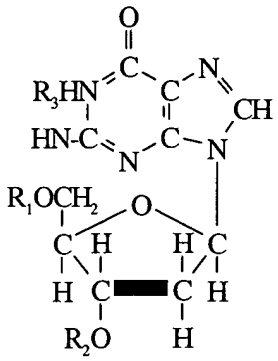
(c) nicotinic acid or

(d) a dicarboxylic acid with 3 to 22 carbon atoms, and R_3 is an acyl group derived from an optionally substituted benzoyl or heterocyclic carboxylic acid that is substantially nontoxic, or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable carrier.

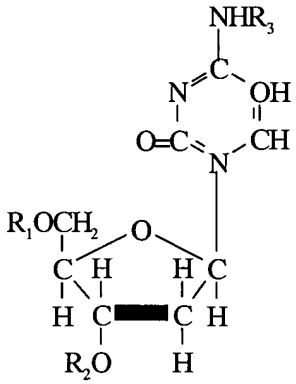
54. A method for treating or preventing a mutagen-induced cellular damage comprising administering to an animal an effective amount of a composition comprising an effective amount of each of at least two compounds selected from at least two of the groups of compounds having formulae



(I)



(II)



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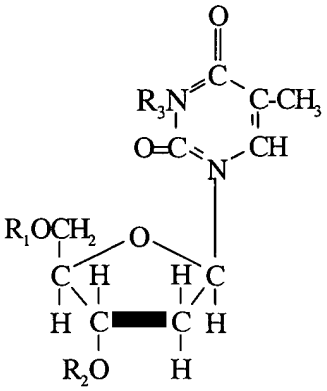

(IV)

wherein R_1, R_2, and R_3 are the same or different and each is H or an acyl group derived from a carboxylic acid, provided that at least one of said substituents R_1, R_2, and R_3 on each of said groups of compounds is not hydrogen, or pharmaceutically acceptable salts thereof, and a pharmaceutically acceptable carrier.